

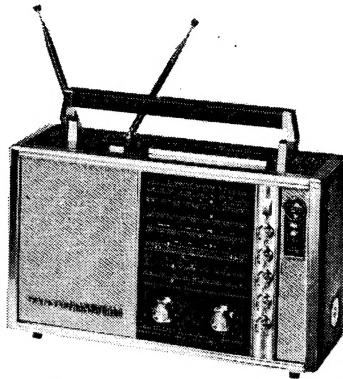
# SANYO

17-transistor, 6-band  
Portable Radio

## MODEL 17H-815 SERVICE MANUAL

SANYO ELECTRIC CO., LTD.

INTERNATIONAL DIVISION: SANYO ELECTRIC TRADING CO., LTD.  
OSAKA, JAPAN



### SPECIFICATIONS

Frequency range.....	FM 87 - 108 MC	(16) 2SB405	Power amplifier.
SW 1	2.3 - 7.3 MC	(17) 2SB405	Power amplifier.
SW 2	8.0 - 22.0 MC	(1) 1S553	A.F.C.
49m	5.95 - 7.3 MC	(2) 1S188	FM A.G.C.
MW	520 - 1,605 KC	(3) 1S188	FM limiter
LW	150 - 350 KC	(4) 1S188	Discriminator
Transistors.....	(1) 2SC668D FM RF amplifier.	(5) 1S188	Discriminator
	(2) 2SC545 FM local oscillator.	(6) SIA-3	AM bias stabilizer
	(3) 2SC668 Mixer.	(7) 1S188	AM detector
	(4) 2SC545 FM 1st I.F. amplifier.	(8) SIA-3	FM oscillator stabilizer.
	(5) 2SC537 FM 2nd I.F. amplifier.	Power output.....	(1) Maximum 3,000 mW
	(6) 2SC537 FM 3rd I.F. amplifier.	(2) Undistorted 2,000 mW	
	(7) 2SA222 AM mixer.	Current Drain.....	(1) No signal 30 mA
	(8) 2SC537 AM local oscillator.	(2) Maximum 600 mA	
	(9) 2SC537 AM 1st I.F. amplifier.	Power supply.....	(1) 9 volt, 6 x UM-1 (size "D" flashlight battery) or D9-815 AC adaptor.
	(10) 2SC537 AM 2nd I.F. amplifier.	Loudspeaker .....	5" x 7" oval type permanent dynamic speaker, Voice coil impedance 8 ohms.
	(11) 2SD187 Squelch control.	Cabinet dimensions.....	390mm(w) x 240mm(h) x 120mm(d)
	(12) 2SB303 Pre-amplifier.	Net weight .....	approx. 4.6 kg
	(13) 2SB186A Pre-amplifier.		
	(14) 2SB186A Pre-amplifier.		
	(15) 2SA202C Driver.		

### ALIGNMENT PROCEDURES

#### AM ALIGNMENT

Sequence of Alignment	Wave Range	Dial Pointer	Signal Generator Frequency	Modulation	Connection high side of Signal Generator	Coll Adjust-ment	Dial Pointer	Signal Generator Frequency	Modula-tion	Trimmer Adjust-ment	Indication
I.F.T.	T15	MW	1600KC	455KC	AM 30%	Thru. Loop Antenna					Mar. Output
z.F.T.	T14	MW	1600KC	455KC	AM 30%	"					"
I.F.T.	T13	MW	1600KC	455KC	AM 30%	"					"
Oscillator	LW	LW	160KC	160KC	AM 30%	"	T- 8	320KC	320KC	Ct 12	"
Antenna	LW	LW	160KC	160KC	AM 30%	"	L-16	320KC	320KC	Ct 7	"
Oscillator	MW	MW	600KC	600KC	AM 30%	"	T- 9	1400KC	1400KC	Ct 11	"
Antenna	MW	MW	600KC	600KC	AM 30%	"	L-14	1400KC	1400KC	Ct 6	"
Oscillator	SW1	SW 1	2.5MC	2.5MC	AM 30%	"	T-10	6.5MC	6.5MC	Ct 10	"
Antenna	SW1	SW 1	2.5MC	2.5MC	AM 30%	"	L-13	6.5MC	6.5MC	Ct 5	"
Oscillator	SW2	SW 2	9.0MC	9.0MC	AM 30%	"	T-11	20MC	20MC	Ct 9	"
Antenna	SW2	SW 2	9.0MC	9.0MC	AM 30%	"	L-11	20MC	20MC	Ct 4	"
Oscillator	49m	49m	6.0MC	6.0MC	AM 30%	"	T-12	6.2MC	6.2MC	Ct 8	"
Antenna	49m	49m	6.0MC	6.0MC	AM 30%	"	L- 9	6.2MC	6.2MC	Ct 3	"

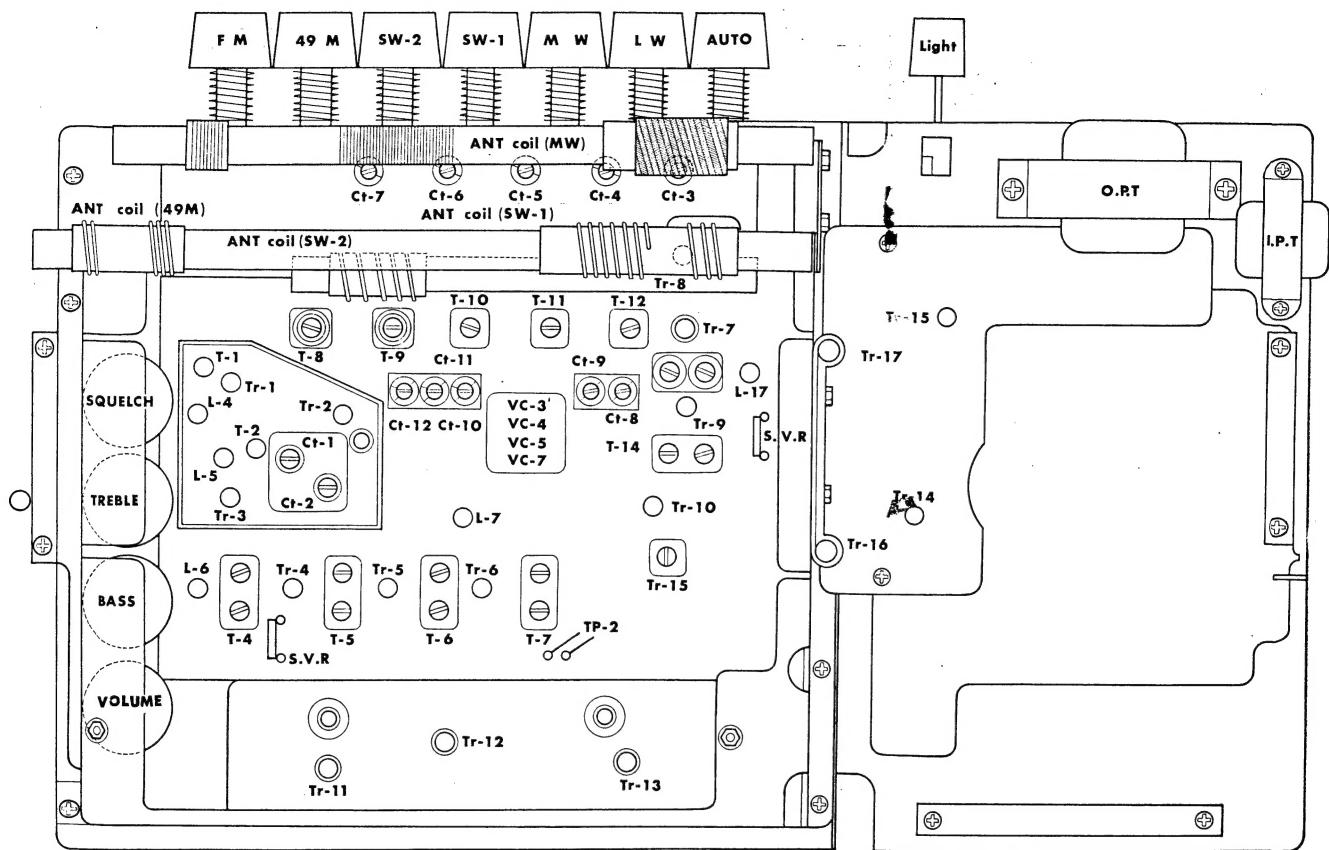
#### FM IF ALIGNMENT

Sequence of Alignment	Wave Range	Alignment Frequency	Testing Equipment Connection	Adjustment	Curve
1	T-6 (I.F.T.)	FM	10.7 MC	Connect sweep generator to test point TP-1 and oscilloscope to test point TP-2.	Detune T7 and T6 tune for max. gain and symmetry of response curve.
2	T-5 (I.F.T.)	FM	10.7 MC	Same as above connection.	T-5 tune for max. gain and symmetry of response curve.
3	T-4 (I.F.T.)	FM	10.7 MC	Same as above connection.	T-4 tune for max gain and symmetry of response curve.
4	T-7 (I.F.T.)	FM	10.7 MC	Connect sweep generator to test point to TP-1 and oscilloscope to test point TP-3.	T-7 tune symmetry and max.gain of response curve.

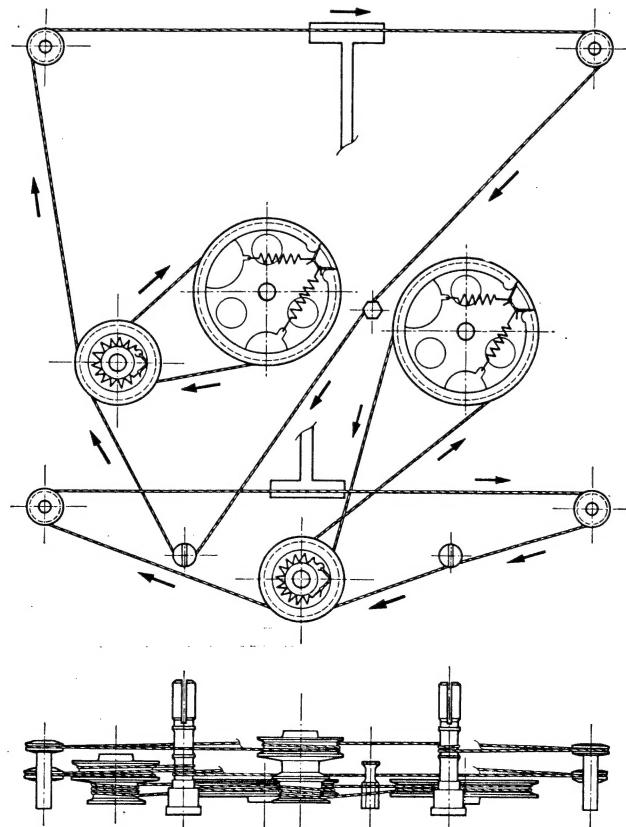
#### FM RF ALIGNMENT

Sequence of Alignment	Wave Range	Dial Pointer	Signal generator Frequency	Modulation	Connect high side of Generator to	Coll Adjust-ment	Dial Pointer	Signal Generator Frequency	Modula-tion	Trimmer Adjust-ment	Indicator
Oscillator	FM	87.0 MC	87.0 MC	22.5 KC	Signal generator to TP-1	T-3	104.0 MC	104.0 MC	22.5 KC	Ct-2	Mix output
Antenna	FM	87.0 MC	87.0 MC	22.5 KC	Signal generator to TP-1	T-2	104.0 MC	104.0 MC	22.5 KC	Ct-1	Mix output

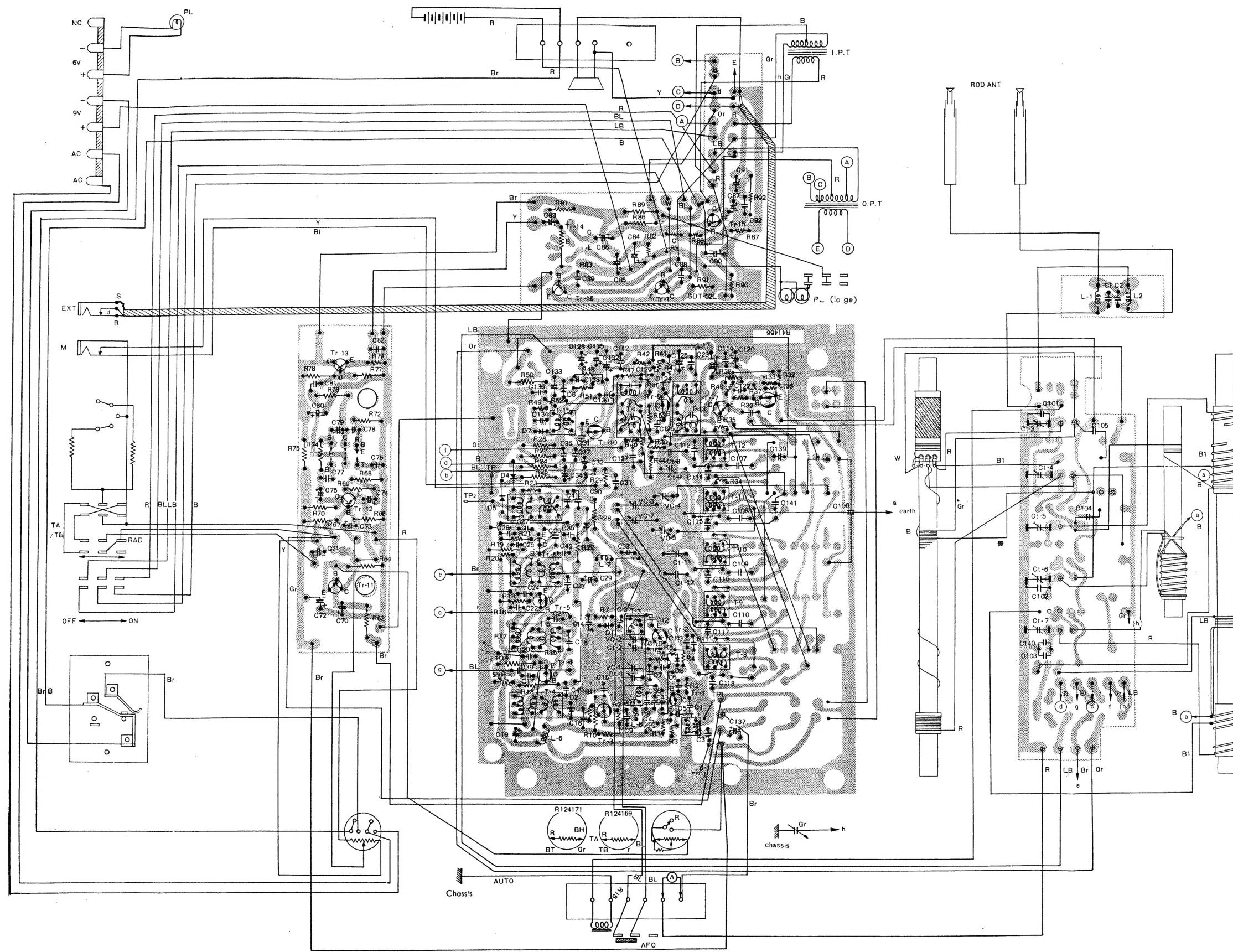
## LOCATION OF MAIN PARTS



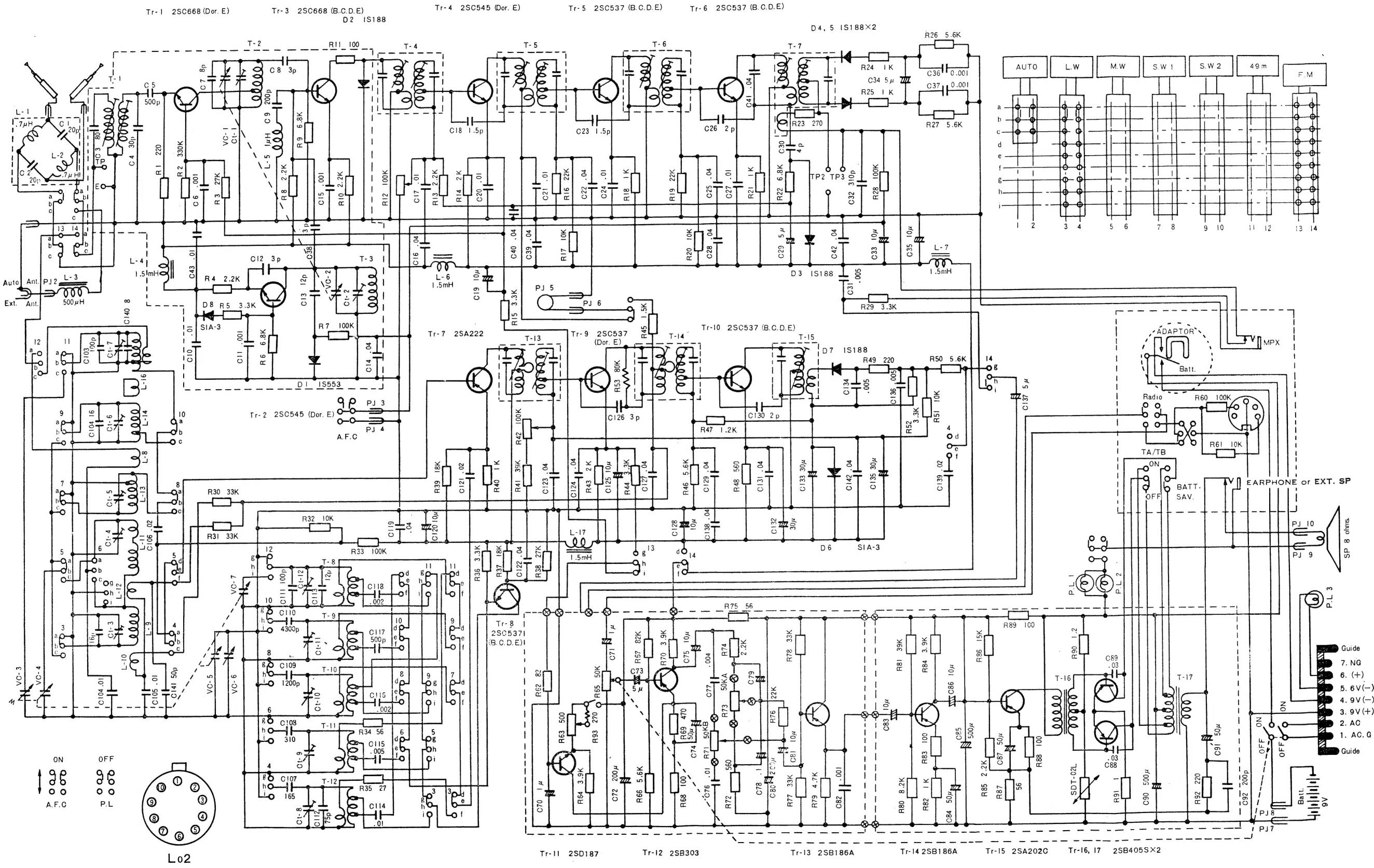
## DIAL STRING



## **WIRING DIAGRAM-**



## CIRCUIT DIAGRAM



## PARTS LIST

Symbol No.	Description	Q'ty
<b>TRANSISTORS &amp; DIODES</b>		
Tr-1	2SC668D	1
Tr-2	2SC2SC545	1
Tr-3	2SC668	1
Tr-4	2SC545	1
Tr-5	2SC537	1
Tr-6	2SC537	1
Tr-7	2SC537	1
Tr-8	2SA222	1
Tr-9	2SC537	1
Tr-10	2SC537	1
Tr-11	2SD187	1
Tr-12	2SB303	1
Tr-13	2SB186A	1
Tr-14	2SB186A	1
Tr-15	2SA202c	1
Tr-16	2SB405	1
Tr-17	2SB405	1
D-	1S188 (for Discriminator)	2
D-	1S188 (for FM circuit)	4
D-	1S553 (for AFC)	1
	SIA3	1
<b>Stock No.</b>	<b>Description</b>	<b>Q'ty</b>
<b>COILS</b>		
R-S81362	-Antenna coil, complete (for MW, LW)	1
R-W2284	-Antenna coil	
R-35077b	-Holder	
R-S81363	-Antenna coil, complete (for SW1, SW3)	1
R-W2285	-Antenna coil	
R-35077b	-Holder	
R-W2283	Antenna coil (for FM)	1
R-W4034	RF coil	1
R-W8218	Oscillator coil (for FM)	1
R-W8219	Oscillator coil (for LW)	1
R-W8220	Oscillator coil (for BC)	1
R-W8221	Oscillator coil (for SW-1)	1
R-W8222	Oscillator coil (for SW-2)	1
R-W8223	Oscillator coil (for SW-3)	1
R-W1058	Chock coil (4.5Ω)	1
R-W1059	Chock coil (6.0Ω)	1
R-W1060	Chock coil (500μH)	1
R-W9021	VHF coil (3.5t)	2
R-W2300	Antenna coil (for SW-2)	1
<b>TRANSFORMERS</b>		
5W022	IFT (for AM, yellow)	1
R-W5W023	IFT (for AM, white)	1
R-W5T241	IFT (for AM, black)	1
R-W5W024	IFT (for FM, brown)	1
R-W5W025	IFT (for FM, green)	1
R-W5W026	IFT (for FM, blue)	1
R-W5W027	IFT (for FM, red)	1
R-W6325	I.P.T (Input Transformer)	1
R-W6326	O.P.T (Output Transformer)	1
<b>CONTROLS</b>		
R-R124168	Variable resistor (50k)	1
R-R124169	Variable resistor (50k B)	1
R-R124170	Variable resistor (500 B)	1
R-11011	Variable resistor (100 k)	1
R-C1116	Variable capacitor (4F-20G)	1
R-C1098	Variable capacitor (2F-20GT)	1
R-C1128	Variable capacitor (for Fine tuning)	1
R-C0050	Trimmer (for AM ant.)	5
R-R124171	Variable resistor (50k A)	1
R-C0058	Trimmer (for AM oscillator)	4
R-C5700	Trimmer (for AM oscillator)	1
<b>LOUDSPEAKER</b>		
R-S6418	Loudspeaker (5" x 7", 8 ohms)	1
<b>ELECTROLYTIC CAPACITORS</b>		
R-C9127	500 μF 15 v	2
R-C9146	200 μF 10 v	2
R-C9525	50 μF 10 v	4

## PARTS LIST

Stock No.	Description	Q'ty
<b>CHASSIS</b>		
R-241016	Pulley shaft (For FM)	2
R-32685	Double pulley	1
R-241158	Pulley shaft	1
R-44291	Holder (for Pilot)	2
R-112477	Fixing metal (for Pilot switch)	1
R-31853	Holder (Fixing for terminal)	1
R-112700	Fixing metal (band switch)	2
R-241157	Guide shaft	1
R-S81197	Knob, complete	1
R-32576	Knob	
R-261337	Telltale plate	
R-S81202	Knob, complete	1
R-32576	Knob	
R-261342	Telltale plate	
R-S81198	Knob, complete	1
R-32576	Knob	
R-261338	Telltale plate	
R-S81199	Knob, complete	1
R-32576	Knob	
R-261339	Telltale plate	
R-S81200	Knob, complete	1
R-32576	Knob	
R-261340	Telltale plate	
R-S81203	Knob, complete	1
R-32576	Knob	
R-261341	Telltale plate	
R-S81204	Knob, complete	1
R-32686	Knob	
R-261345	Telltale plate	
R-112945	Fixture (Metal)	
R-35297	Base	
R-261608	Holder (for Antenna core)	2
R-44065	Cushion (for Variable condenser)	2
R-39188	Drum	2
R-1513a	Coil spring	4
R-15096a	Coil spring	2
R-27065	Pulley	4
R-241263	Pulley shaft	2
R-39310	Double pulley	1
R-241158	Pulley shaft	1
R-S7069	Special nut	2
RR-24123	Cap nut	4
R-44045	Cushion	1
R-44240	Cushion	1
R-	Dial string (600mm)	1
R-	Dial string (850mm)	1
R-	Dial string (700mm)	1
R-	Dial string (750mm)	1
R-	Washer 4.3" x 10" x 1t)	2
<b>Stock No.</b>	<b>Description</b>	<b>Q'ty</b>
<b>RESISTOR</b>		
R70	3.9 K	1
R79	4.7 K	1
R80	220 K	1
R86	15 K	1
R89	100 "	1
R91	1 "	1
<b>CAPACITOR</b>		
C1, 2	Ceramic 13pF ±10%	25WV
C3	80pF "	50WV
C4	15pF "	25WV
C5	500pF ±20%	25WV
C6, 11, 15	0.001μF +80, -20%	25WV
C7	12pF ±10%	25WV
C8, 30	4pF ±0.5pF	25WV
C9, 92	20.0pF ±10%	25WV
C10, 17, 20, 21, 24	0.01μF +80, -20%	50WV
C27, 43	3pF ±0.25pF	25WV
C12, 38, 126	5pF ±0.5pF	25WV
C13	0.04μF +80, -20%	50WV
C14, 16, 22, 25, 28, 39, 40, 42, 119, 122	1.5pF ±0.25pF	25WV
C123, 124, 127, 129, 131, 138, 142	2pF "	25WV
C26, 130	0.005μF ±20%	50WV
C31, 115, 134, 136	310pF ±10%	125WV
C32, 108	Mylar 0.01μF ±20%	50WV
C36, 37	30pF ±10%	50WV
C41	0.01μF ±10%	25 or 50WV
C76, 104, 105, 114	0.004μF "	50WV
C77	0.03μF ±10%	50WV
C88, 89	16pF ±10%	25WV
C101, 102	100pF "	50WV
C103, 111	0.02μF ±20%	50WV
C106, 121, 139	0.02pF ±10%	125WV
C107	165pF ±10%	125WV
C109	1200pF "	35WV
C110	4300pF "	35WV
C112	75pF ±5%	50WV
C113	20pF ±10%	25 or 50WV
C116, 118	0.002μF ±20%	50WV
C117	500pF ±10%	50WV
C140	8pF "	25WV
C141	50pF "	50WV
<b>Stock No.</b>	<b>Description</b>	<b>Q'ty</b>
<b>ELECTRIC PARTS</b>		
R-S4335a	Push-button switch (for BAND selector)	1
R-S4208	Slide switch (for Batt. Econo. TA/TB)	3
R-4303	Slide switch (for AFC)	1
R-S1288	Plug (7 pin)	1
R-S3186	Terminal plate	2
R-S1266b	Telescopic rod antenna	2
R-S2802	Socket (5 pin DIN type)	1
R-S2155	Socket for AUTO antenna	1
R-261526	Radiator (for 2SB405)	1
R-23781	Shield	1
R-S3018	Eyelet (2.0Ω)	62
R-S1155	Tip	12
R-S2139	Socket (for External speaker)	2
R-S81214f	Battery case, complete	1
R-424099	Battery case	
R-S81215e	Battery case, complete	1
R-112708d	Fixing metal	
R-34161	Insulation plate	
R-23056	Fixing metal	
R-23101	Battery terminal	
R-25953	Coil spring	
R-	Round head rivet	
R-	Eyelet	
R-S81216d	Battery terminal, complete	
R-112709b	Battery terminal	
R-25053	Coil spring	
R-471042	Battery instruction sheet	1
R-25239a	Spring	1
R-S3008	Lug	6
R-25154b	Lug	2
R-25154b	Lug	1
R-S1155	Tip	2
R-S4381	Push-button switch (for Pilot lamp)	1
R-S2160a	Socket (for AC-DC switch)	1
R-S1289	Plug (for AC-DC switch)	1
R-S8535a	External antenna tip, complete	1
R-S1154a	Plug	
R-23165	Lug	
R-S2160a	Cushion	
R-44016	Knob	
R-24106	Knob	